ITEM 5. Radioactive Material.

1. Elements and mass numbers: Hydrogen-3, Promethium-147, Nickel-63, and Americium-241.

2. Chemical and physical form:

a. Tritium gas sealed with phosphor in glass ampoules containing less than 1 percent tritium oxide. Drawings of current configurations of the sources are at enclosure 1.

b. Promethium-147 bound ceramic microspheres sealed with phosphor in glass ampoules. Drawings of current configurations of the sources are at enclosure 1.[1]

c. Nickel 63 metal plated on a brass cylinder. Drawings of current configurations of the sources are at enclosure 1.

d. Americium oxide as a foil. Drawings of current configurations of the sources are at enclosure 1.

3. Maximum amount that will be possessed at any one time:

a. Hydrogen-3.

(1) Fire Control Devices: 1.5 x 10+6 curies tritium total. Maximum activity per source is 10 curies +/- 10%.

(2) Tritium Rifle Sights: 9 curies total.

b. Promethium-147: 1 curie total.

c. Nickel-63: Maximum amount that will be possessed at any one time is not to exceed 1,500 curies (1.5 x 10E6 millicuries) total and a maximum of 15 millicuries[2] per source.

d. Americium-241: Maximum amount that will be possessed at any one time: 30 curies or a maximum of 100,000 sources. Each individual source will contain a maximum of 300 microcuries.

[1] Item 5-2b: 13 May 98, 1.b. Refer to the PM147 drawings enclosed with this letter. Need to add this to the application package.
[2] Item 5-3c: 13 May 98, 1.c.

Item 6. Purpose for Which Licensed Material will be Used.

1. Hydrogen-3 will be used to excite a phosphor contained in sealed sources. The sealed sources are used to illuminate scales, counters, level vials, reticules, and aiming posts for optical fire control devices. These devices will be used by the U.S. Army, the National Guard and U.S. Marine Corps on Department of Defense (DOD) installations and temporary job (field) sites throughout the United States and the world.[3]

a. The fire control devices are used for sighting and firing weapon systems including artillery, tanks, mortars and howitzers. Drawings for the devices are provided at enclosure 2.

b. The byproduct material will be used as phosphor exciters contained in sealed sources on rifle sights. These sealed sources are used in the front post sight of the M16A1 rifles. Drawings for the devices are provided at enclosure 2.

2. Promethium-147. The byproduct material will be used as phosphor exciters contained in sealed sources on rifle sights. These sealed sources are used in the front post sight of the M16A1 rifles. Specification Drawings are provided at enclosure 2.[4]

Note: The rifle sights described in Items 6.1.b and 6.2 are no longer issued. Request that the U.S. Army, National Guard, and U.S. Marine Corps be authorized to possess (until found), remove from service, and dispose of these sights at installations and temporary job sites throughout the United States and the world.[5]

3. The nickel 63 sources described in this application are integral parts of the Chemical Agent Monitor (CAM), Improved Chemical Agent Monitor (ICAM) and the GID-3 Automatic Chemical Agent Detector (ACADA) which are gas detection devices. These devices are used to detect and notify soldiers of the presence of various types of toxic gasses on the battlefield or in potential terrorist situations. These devices are either hand held (CAM and ICAM) or ground emplaced/vehicle mounted (ACADA). This device will be used by the U.S. Army, the National Guard on Department of Defense (DOD) installations and temporary job (field) sites throughout the United States and the world. Device drawings are provided at enclosure 2.

[3] Item 6-1: 13 May 98, 2.a. This sentenced was moved from paragraph 1.b. to paragraph 1, IAW 31 March 98, 2.a.
[4] Item 6-2: 13 May 98, 2.c. Please refer to the PM147 source drawings included with this reply. Need to add these drawings to the application.
[5] Item 6-2: 13 May 98, 2.a.

4. The americium-241 sources described in this application is an integral part of the M43A1 Chemical Agent Detector. This instrument is used to detect and warn soldiers of the presence of toxic nerve gases on the battlefield. The Am-241 source is located in the cell module of the detector and is a foil disk made of americium oxide in a gold matrix. The foil disk is fixed using epoxy bond, between a gold-palladium alloy face and a silver backing. This assembly is affixed, again using epoxy to a metal screen that is secured by a retainer ring within the sensing cell module. The source is special form. The cell module itself is a zinc metal alloy box that is designed to preclude direct contact with the source either by operators or by personnel servicing the instrument.

The M43A1 CAD functions in a manner similar to a household smoke detector but is intended specifically to detect the presence of battlefield chemical agents and warn troops of their presence. It is intended to be used outdoors either placed on the ground or on the exterior of a vehicle by special mounting. Indoor operation for training or maintenance purposes must use a filter designed to affix to the air outlet port of the instrument. This device will be used by the U.S. Army, the National Guard and U.S. Marine Corps on Department of Defense (DOD) installations and temporary job (field) sites throughout the United States and the world. Device drawings are provided at enclosure 2.

5. Information about the devices in this license is summarized in a table identifying the devices by model number, NRC registration number, number of sources, source drawing number, and total curies per device is at enclosure 3.

6. Specific locations of use, storage, repair and maintenance.[6] The Department of the Army is requesting two bulk storage locations for licensed commodities: Rock Island Arsenal, Rock Island, Illinois and Blue Grass Army Depot, Richmond, Kentucky. Other facilities are not different from the general designations. All other storage locations are under the Defense Logistics Agency which maintains its own NRC license:[7] 37-30062-13.[8]

[6] Item 6-6: 31 March 98, 2.b.
[7] Item 6-6: 13 May 98, 2.b.
[8] Item 6-6: 14 Aug 98, a

Item 7. Individuals Responsible for Radiation Safety Protection Program and their training and experience.

1. The radiation safety program is administered under the technical supervision of the ACALA health physicists. Mr. Jeffrey Havenner is designated as the Radiation Safety Officer (RSO). Mr. Tim Mohs is designated as the Alternate Radiation Safety Officer (ARSO).[9]

2. Resumes for the health physicists are at enclosure 4.

3. The RPO's at camps, posts, and installations are responsible for the local radiation protection program. The RPO's assure that:

a. inventories are performed;

b. records are maintained;

c. leak tests and area surveys are performed;

d. individuals have the appropriate level of radiation safety training;

e. areas are appropriately posted in accordance with the regulations;

f. shipping and receiving follow the appropriate radiation safety protocols;

g. radiation safety committees are formed and meet at least annually;

h. radioactive waste is collected, stored, and disposed of according to the regulations;

i. and incident response.[10]

[9] Item 7-1: 13 May 98, 3.b.
[10] Item 7-3: 13 May 98, 3.d.

Item 8. Training For Individuals Working In Or Frequenting Restricted Areas.

Training requirements for individuals working in or frequenting restricted areas where radioactive material authorized under this license will be listed by device.

1. User/Maintainer Level.

a. Individual User. Users of ACALA radioactive commodities are those individuals who place in operation or operate devices containing radioactive sources. The individual user is authorized possession, use and performance of operational checks and services only. Individual users of ACALA radioactive commodities will receive initial radiation safety training that includes safe handling procedures, biological effects and emergency procedures. Annual refresher training will be required thereafter. Unit commanders will be responsible for ensuring that training is conducted for devices possessed and will ensure that training records are kept for inspection by the installation RPO and the licensee.

(1) Minimum time spent in initial radiation safety training. The requirements of 10 CFR 19.12 are that "All individuals who in the course of employment are likely to receive in a year an occupational dose in excess of 100 mREM (1 mSv) shall be" informed of the listed items. By the criteria of 10 CFR 19.12 no radiation safety training is required. We do not specify hours because none of the users of these devices will receive in excess of 100 millirem per year.[11] ~~We feel some obligation however, to insure that users at least understand that their equipment does contain radioactive material.~~ However, we will provide training, which will insure users understand their equipment contains radioactive material.[12] This training will include recognition of radiation symbols, caution signs, etc; recognition and reaction to damage to the equipment where leakage of radioactive material may result; and actions in case of loss of material.[13]

(2) Listing of basic subjects covered in "annual refresher training." The refresher training will constitute a review of the subjects covered (Item 8.1.a).[14]

(3) Minimum instructor qualifications for initial and refresher training. The individual who will provide the training

[11] Item 8-1a(1): 13 May 98, 4.a(1).
[12] Item 8-1a(1): 14 Aug 98, b
[13] Item 8-1a(1): 13 May 98, 4.a(1).
[14] Item 8-1a(2): 13 May 98, 4.a(2).

and refresher would be the unit chemical Non Commissioned Officer (NCO) who receives Military Occupational Skill training at the US Army Chemical School. Alternatively the Unit Nuclear, Biological and Chemical (NBC) NCO who is trained at the Divisional NBC School, or the installation radiation protection officer can also provide training.[15]

b. Maintenance Support. Maintenance Personnel are responsible for repair of ACALA radioactive commodities beyond the level of performing checks and services in connection with operating the device. Maintenance personnel will receive initial radiation safety training that includes safe handling procedures, survey procedures, specific hazards of isotopes in devices maintained, leak test and emergency procedures. Training will be provided either by Army Specialty School, on the job training or by courses authorized by the licensee. Job proficiency evaluation prior to starting work is acceptable as proof of training. Job evaluation will be required annually after assuming duties. Records of maintenance personnel training and/or job evaluations will be maintained by maintenance shop supervisor/commander and available for inspection by the installation RPO and the licensee.

(1) Initial Training In Authorized Procedures. Maintenance personnel receive training in authorized maintenance procedures through Advanced Individual Training (AIT) where soldiers are prepared to work in their military occupational specialty (MOS). As of the present time, the only AIT course that integrates radiation safety training with maintenance training is the Electronic Repairman course taught at Fort Gordon Georgia (US Army Signal School) which encompasses the chemical devices. We have recently received an agreement from the US Army Training and Doctrine Command (TRADOC) to include radiation safety training in all MOS training where this would be required. This will be in place and the instruction will commence by the end of this year (1998).[16] Government Civilian and Contractor personnel are trained through the Radiation Safety courses offered by TACOM-ACALA and CECOM and various courses offered on specific weapons systems through TACOM-ACALA.[17]

(2) Minimum qualifications of those who will provide on the job training. Persons who will provide on the job training (OJT) will be shop supervisors or senior maintenance personnel who have received MOS training through the US Army Signal School or who have, themselves, had OJT plus supervised experience.[18]

(3) Criteria for approving licensee-authorized courses. The MOS courses, the ACALA Safety Office is developing the

[15] Item 8-1a(3): 13 May 98, 4.a(3).
[16] Item 8-1b(1): 13 May 98, 4.b(1).
[17] Item 8-1b(1): 14 Aug 98, c.
[18] Item 8-1b(2): 13 May 98, 4.b(2).

radiation safety portion of the course. Use of this material and the training of the TRADOC instructors will constitute a licensee-approved course.[19]

(4) Job Proficiency Evaluations. The shop supervisor and the unit commander are responsible for ensuring job proficiency for maintenance personnel. They will do this under guidance from the installation RPO.[20]

c. Installation RPO. The installation RPO is required to have 40 hours of formal training prior to assuming the duties ~~and have a job proficiency evaluation every 2 years~~.[21] The training includes hazards and biological effects of isotopes in the commodities located at the installation; emergency procedures; detection and measurement of radioactivity; calculations based on measurements; and good radiation program practices for storage, monitoring, decontamination, disposal.[22]

(1) RPO Instructors. The Army's only schools for preparing installation RPO's at this time is the US Army Chemical School at Fort McClellan, Alabama or the US Army Health Service Academy at Fort Sam Houston, Texas. These are TRADOC schools with personnel trained in health physics who do the instruction. The Army also may get individuals from the Navy who have gone through that service's RPO School in Yorktown, Virginia.[23] The U.S. Army Communication Electronics Command (CECOM), Directorate of Safety Risk Management "Radiation Protection Officer Training Course" meets the acceptable requirements for the 40 hours of formal radiation protection officer training.[24] Finally we will accept training from civilian sources that is comparable to or exceeding the service schools based upon transcripts produced by the incumbent to the position.[25]

(2) RPO Refresher Training. The ACALA will provide training opportunities to the installation RPOs. The training will take the form of live courses, Internet based training and interactive training compact disks.[26]

~~(3) Minimum Qualifications of the Evaluators (job proficiency of installation RPO's). This is a program that the ACALA Safety Office intends to implement by development of interactive training through the Internet and by CD-ROM. The CD-ROM with our training material is already in existence. The~~

[19] Item 8-1b(3): 13 May 98, 4.b(3).
[20] Item 8-1b(4): 13 May 98, 4.b(4).
[21] Item 8-1c: 18 Mar 99, a(1) & 18 May 99, para 2.
[22] Item 8-1c: 18 Mar 99, a(1).
[23] Item 8-1c(1): 13 May 98, 4c(1).
[24] Item 8-1c(1): 18 Mar 99, a(2) & 18 May 99, para 3 (enclosed an outline).
[25] Item 8-1c(1): 13 May 98, 4.c(1).
[26] Item 8-1c(2): 18 Mar 99, a(1).

~~minimum qualifications of the evaluators are identical to that of RSO since they will be doing the evaluations.~~[27]

2. Depot.

a. Maintenance Personnel. The depot RPO provides at least 8 hours training to these individuals prior to assuming duties. They will receive 4 hours of refresher training every two years thereafter. They will be informed that they will be working with specific radioactive material in controlled areas and are subject to public dose limits of 10 CFR part 20.1301 not to exceed 100 mREM per year. Records of personnel training include a brief outline of the instructions, a list of persons who receive these instructions, and date presented. The instructions include:

(1) Hazards of the radio nuclides they will be working with.

(2) Emergency and notification procedures.

(3) Safe working techniques and proper use of protective equipment.

(4) Proper transportation procedures.

b. Depot RPO.

(1) The Depot RPO is required to have a minimum of 80 hours training in the following material:

(a) Principles and practices of radiation protection.

(b) Radioactivity measurement standardization, monitoring techniques, and instrumentation.

(c) Mathematics and calculations basic to the use and measurement of radioactivity.

(d) Biological effects of radiation.

(2) Courses used to meet the above requirements will be approved by the licensee. Any alternate course will be approved by the licensee, and as a minimum, meet current course criteria.[28]

[27] Item 8-1c(3): 13 May 98, 4.c(2); 18 Mar 99, a(1).
[28] Item 8-2b(2): 13 May 98, 4.d.

Item 9. Facilities and Equipment.

1. Operator and Unit Use.

a. Security and Control. Users are required to secure from unauthorized removal of, or access to military equipment containing radioactive materials when in storage. Users must control and safeguard weapons or devices containing licensed radioactive material when not in storage from loss, theft or damage.

b. Storage Areas. Storage areas will be so located as to be free from danger of flooding and outside the danger radius of flammable materials and explosives. In addition, tritium Fire Control Device storage areas will have adequate ventilation to prevent undue exposure to personnel entering or working in the facility. All storage areas will be posted as follows:

(1) Warning Signs. Signs stating "No eating, drinking, or smoking" will be posted in storage and maintenance areas. Exceptions to this requirement are controlled areas such as motor pools, storage yards, etc., which need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e. artillery, howitzers, and tracked vehicles). "Caution, Radioactive Material(s)" signs will not be required to be posted in rooms and areas, unless, personnel, or their representatives, request that such postings be applied as enhanced safety notification (10 CFR 1903(c)).[29]

(2) In addition, maintenance areas will also post copies of the following:

(a) NRC Form 3.

(b) Copies of 10 CFR Parts 19, 20, 21.*

(c) Copy of the ACALA NRC License.*

(d) Section 206 of the Energy Reorganization Act.

*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

2. Maintenance Support.

a. Security and Control. Maintenance personnel are

[29] Item 9-1b(1): 13 May 98, 5.a.

required to secure from unauthorized removal or access military equipment containing radioactive materials that are in storage. When removed from storage, licensed material will be safe guarded against loss, theft or damage.

b. Storage Areas. Storage areas will be so located as to be free from danger of flooding and outside the danger radius of flammable materials and explosives. In addition, tritium Fire Control Device storage areas will have adequate ventilation to prevent undue exposure to personnel entering or working in the facility.

c. Posting Warning Signs.

(1) "No eating, drinking, or smoking" signs will be posted in storage and maintenance areas. Controlled areas such as motor pools, storage yards, etc., need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e., artillery, howitzers, and tracked vehicles). "Caution, Radioactive Material(s)" signs will not be required to be posted in rooms and areas, unless, personnel, or their representatives, request that such postings be applied as enhanced safety notification (10 CFR 1903(c)).[30]

(2) In addition, maintenance and storage areas will also post copies of the following:

(a) NRC Form 3.

(b) Copies of 10 CFR Parts 19, 20, 21.*

(c) Copy of the ACALA NRC License.*

(d) Section 206 of the Energy Reorganization Act.

*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

3. Depot-Level Maintenance. The licensee will maintain a list of approved locations for review by the NRC inspectors, approval will be based on the criteria in renewal application dated October 29, 1997 (Item 9).[31] Army Depot installations that have been approved by the licensee are authorized to perform depot-level maintenance and store ACALA radioactive commodities in accordance with the following criteria:

[30] Item 9-2c(1): 13 May 98, 5.a.
[31] Item 9-3: 13 May 98, 5.b. & 14 Aug 98, d.

a. Fire Control Devices. Depot-level maintenance facilities will have a Tritium Instrument Repair Room (TIRR) with the following specifications:

(1) Air Monitoring. A tritium air monitor is required for each bulk storage location set to alarm at no higher than 5x10-6 micro curie/ml.

(2) Fume Hoods. All actions on devices with broken sources will be performed inside an exhaust hood. The hood will have an average face velocity of at least 100 linear feet per minute with the shield in the operating position.

(3) Storage. Storage of items awaiting repair will be in areas separate from the TIRR. Storage area posting requirements apply for these areas.

(4) Ventilation. Areas with personnel working with tritium must have adequate ventilation to prevent undue exposure to personnel.

(5) Surveys. Routine area surveys are required of all TIRR's. Wipe test surveys will be performed monthly.[32]

b. Additionally, for all non tritium commodities Army Depot maintenance facilities will:

(1) Store radioactive commodities in rooms, buildings, or caged areas designated for storage of radioactive items. There is no limit to the number of like commodities per storage area. The storage areas will be so located as to be free from danger of flooding and outside the radius of flammable materials and explosives.

(2) Perform area wipe test surveys monthly.[33] Wipe tests will be analyzed with the appropriate counting system. Surveys will also be performed at the end of each work day when maintenance or repair is performed on a radioactive commodity.

(3) "No eating, drinking, or smoking" signs will be posted in storage and maintenance areas. Controlled areas such as motor pools, storage yards, etc., need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e., rifles, mortars, artillery, howitzers, and tracked vehicles). "Caution, Radioactive Material(s)" signs will not be required to be posted in rooms and areas, unless, personnel, or their representatives, request that such postings be applied as

[32] Item 9-3a(5): 13 May 98, 5.c.
[33] Item 9-3b(2): 13 May 98, 5.d.

enhanced safety notification (10 CFR 1903(c)).[34] In addition, Maintenance facilities will also post copies of the following:

(a) NRC Form 3.

(b) Copies of 10 CFR Parts 19, 20, 21.*

(c) Copy of the ACALA NRC License.*

(d) Section 206 of the Energy Reorganization Act.

*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

4. Bulk Storage. The licensee will maintain a list of approved locations for review by the NRC inspectors, approval will be based on the criteria in renewal application dated October 29, 1997 (Item 9).[35] Army Depot installations that have been specifically approved by the licensee are authorized to store bulk quantities of radioactive commodities in accordance with the following specifications:

a. Fire Control Devices.

(1) Surveys. Area wipe test surveys will be taken quarterly. Wipe tests will be analyzed with the appropriate counting system.

(2) Air Monitoring. A tritium air monitor is required for each fire control device bulk storage location set to alarm at no higher than 5x10-6 micro curie/ml.

(3) Storage. Each bulk storage quantity of 10,000 curies will be separated by a fire proof wall or a separation distance of 10 feet.

(4) Ventilation. Areas with personnel working must have adequate ventilation.

b. Other ACALA Radioactive commodities.

(1) Storage. Radioactive commodities will be stored in rooms, buildings, or caged areas designated for storage of radioactive items. There is no limit to the number of non-tritium commodities per storage area. The storage areas will be so located as to be free from danger of flooding and outside the radius of flammable materials and explosives.

[34] Item 9-3b(3): 13 May 98, 5.a.
[35] Item 9-4: 13 May 98, 5.b. & 14 Aug 98, d.

(2) Surveys. Storage areas will be wipe tested quarterly. Wipe tests will be analyzed with the appropriate counting system.

(3) Posting Warning Signs. "No eating, drinking, or smoking" signs will be posted in storage and maintenance areas. Controlled areas such as motor pools, storage yards, etc., need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e., rifles, mortars, artillery, howitzers, and tracked vehicles). "Caution, Radioactive Material(s)" signs will not be required to be posted in rooms and areas, unless, personnel, or their representatives, request that such postings be applied as enhanced safety notification (10 CFR 1903(c)).[36] In addition, bulk storage areas will also post copies of the following:

(a) NRC Form 3.

(b) Copies of 10 CFR Parts 19, 20, 21.*

(c) Copy of the ACALA NRC License.*

(d) Section 206 of the Energy Reorganization Act.

*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

5. Radiation Detection Instruments.

a. Users and DS Maintenance facilities will have appropriate survey instruments as listed in Table 1 Below. Area wipe test analyses will be performed at the installation, if available, or at one of the approved laboratories listed in Item 10. Camps, posts, and stations are at minimum required to have AN/PDR-77 and/or AN/VDR-2 radiac meters[37] and are encouraged to obtain a Liquid Scintillation System.

TABLE 1

TYPE OF INSTRUMENT	NUMBER AVAILABLE
AN/VDR-2 or similar (beta/gamma)	Minimum 2 per maintenance unit

[36] Item 9-4b(3): 13 May 98, 5.a.
[37] Item 9-5a: 13 May 98, 5.f.

AN/PDR-77 or similar (alpha)	Minimum 2 per unit maintenance unit

b. Installations authorized bulk storage or depot-level maintenance will have as a minimum the instrumentation listed in table 2.

TABLE 2

TYPE OF INSTRUMENT	NUMBER AVAILABLE
Liquid Scintillation System	Minimum 1 per bulk storage and/or maintenance depot[38]
Air Monitor (tritium)	Minimum 1 per depot maintenance area
AN/VDR-2 or similar (beta/gamma)	Minimum 2 per maintenance unit
AN/PDR-77 or similar (alpha)	Minimum 2 per unit maintenance unit

c. Calibration.

(1) Survey meters will be calibrated at least annually and calibration standards used will be traceable to National Institute of Standards Technology (NIST).

(2) Air monitors used under this license are calibrated at intervals not to exceed one year.

(3) Liquid scintillation counters ~~used to evaluate wipe tests are calibrated in-house at three month intervals~~ will be calibrated per the manufacturer's instructions.[39]

[38] Item 9-5b: 14 Aug 98, e.
[39] Item 9-5c(3): 18 Mar 99, b(1).

Item 10. Radiation Safety Program.

1. The U.S. Army Armament and Chemical Acquisition and Logistics Activity (ACALA) is responsible for management and support of all radioactive commodities covered by this license. Responsibilities include license management functions performed by the ACALA safety staff (Item 7), and operation of the radiation protection program. The commodities covered by this application are issued to United States Army, active, reserve and National Guard units at locations world wide.

a. Management: The ACALA safety staff is assisted in executing the radiation safety program for its NRC licenses by product center supply management specialists, equipment specialists, engineers and procurement personnel assigned to the management of the various commodities.

b. Radiation Safety Inspection Program.

(1) The ACALA safety staff conducts a regular program of license compliance inspections at depots, posts, camps and stations where commodities are used, stored and/or maintained under this license. We will include visits to the Reserve Support Commands in our inspection program.[40] The inspection program cycle is once every five years for each installation. The ACALA is assisted by other Army Materiel Command radioactive commodity license holders in the performance of the inspections. In addition the Army Center for Health Promotion and Preventive Medicine (CHPPM) at Aberdeen Maryland, is authorized conduct radiation safety inspections under the provisions of this license and provides reports to the ACALA Safety Office.

(1a) Rationale/justification for the five year inspection cycle. Since the storage depots have moved under the DLA NRC License, we are no longer routinely inspecting them. Instead we are turning our attention to the various camps posts and installations where these devices are used and maintained. With increased assistance to the installation RPO's and increased training for soldiers and RPO's we feel that the five-year inspection program should be sufficient.[41]

(2) The ACALA is assisted in the conduct of a program of inspections of the Army National Guard by the U.S. Army Communications Electronics Command (CECOM), which is designated as Radiation Protection Officer (RPO) for Army National Guard units. The CECOM inspectors provide copies of their reports to this office.

[40] Item 10-1b(1): 13 May 98, 6.b.
[41] Item 10-1b(1a): 13 May 98, 6.e.

(3) The ACALA Radiation Safety Program will be reviewed at least annually in accordance with 10 CFR 20.1101.

(4) The Inspectors will be trained and well versed in the regulatory issues pertaining to this license application and the Army radiation program in general. The US Army Material Command has begun this cross-training program between its various subordinate commodity commands.[42]

2. Radiation Safety Supervision.

a. Commanders of installations that receive, store, ship, use, transport, maintain and/or dispose of material covered under this license are responsible for accounting for appointing a properly trained radiation protection officer and for assuring compliance with the provisions of this program at the installation. For use and maintenance of all commodities covered by this license, applicable technical manuals, officially issued supplementary technical instructions, safety of use messages, maintenance advisory messages or ground precautionary messages will be followed.[43]

b. The installation Radiation Protection Officer (RPO) at user locations and depots acts as the licensee's representative ensuring that license conditions are fulfilled at the site where the material is located. The task of the RPO at every depot, installation, Reserve Region or State National Guard Organization is to ensure the safe handling, storage and maintenance of commodities containing radioactive sources. In addition the installation RPO is responsible for the following:

(1) Inventory. Ensure that an up to date inventory of radioactive commodities is available at the installation. Every camp, post or station is required to accomplish annual physical inventories. These inventories are entered into Army databases. TACOM-ACALA Health Physicists have visibility of this information and produce an annual report specific to each installation. Reports are used to reconcile inventories during inspections and assist visits of facilities holding licensed commodities.[44]

(2) Training. Ensure that training for individuals working with licensed material is accomplished and records are available at the installation.

(3) Incident Response and Reporting:

[42] Item 10-1b(4): 13 May 98, 6.c. & 14 Aug 98, f.
[43] Item 10-2a: 13 May 98, 6.a.
[44] Item 10-2b(1): 13 May 98, 6.f. & 14 Aug 98, g. 'Please expand on your description of your inventory program, commensurate with that described on pages 5-7 of your "Reply to NOV", 12 Dec 97.'

(a) The installation RPO responds to incidents and or accidents involving potential release or loss of licensed material at that location. This includes ensuring that any release is identified and contained, that potentially exposed individuals are identified and steps to determine any doses are initiated. When loss of licensed materials is suspected, the installation RPO coordinates immediate efforts to recover the material using resources from the installation.

(b) The installation RPO reports loss or theft to the ACALA RSO and to the Installation's higher Army Headquarters (see incident notification tree at enclosure 5) in accordance with the requirements of 10 CFR 20.2201 and 30.50.

(c) The ACALA RSO reports incidents to the NRC in accordance with the requirements of 10 CFR 20.1501.

(4) Surveys. The installation RPO insures that regular inspections and routine radiation monitoring are conducted at the installation and properly documented. Frequency of surveys and area wipe tests is described in Item 9 of this application.

(5) Records. Radiation safety records for surveys, inventories, calibration and training are maintained for 3 years. The records will be retained at the installation level. This is an RPO responsibility. "Survey" records as specified in 10 CFR 20.2103 are required to be maintained until license termination.[45]

(6) Leak Testing.

(a) Annual leak testing is required for devices containing Am-241 and Ni-63. Leak test procedures for each device are provided at enclosure 6. Leak testing will be performed by qualified maintenance personnel as specified in item 8. All Camps, Posts and Stations are required to accomplish annual wipes of Am241 and Ni63 commodities as the means of inventory. These requirements are to be established in local Standing Operating Procedures (SOP). The Commander at each site is responsible for overseeing personnel and procedures for proper wipe testing of commodities within the commands. He is responsible to ensure personnel are qualified by training to perform their duties.[46] We will enforce the required leak test interval by inspection.[47]

[45] Item 10-2b(5): 13 May 98, 6.g.
[46] Item 10-2b(6)(a): 14 Aug 98, h.
[47] Item 10-2b(6)(a): 13 May 98, 6.h.

(b) We will use only leak test service providers that are specifically licensed by the US NRC, or an agreement state, to perform such services.[48]

(c) Leak Test Action Levels

1. Am-241: Any leak test showing 20 dpm or greater requires the device to be withdrawn from service. The licensee is notified of wipe tests in excess of limits. The user will be given instructions by the licensee for shipping the device to depot maintenance or to hold the device for disposal as radioactive waste. The device will be held at depot maintenance pending overhaul by a contractor licensed to work with loose Am-241 or it will be disposed of as radioactive waste at a licensed disposal facility. No maintenance will be performed on Am-241 contaminated devices.

2. Ni-63: Any device showing removable contamination in excess of 1,000 dpm/100 cm^2 will be re-tested. If the repeat wipe test is less than or equal to 1,000 dpm/100 cm^2 no further action is required. If the second wipe test is still greater than 1,000 dpm/100 cm^2,[49] the device will be evaluated further at a depot equivalent level. The licencee is notified of wipe tests in excess of limits.

3. No leak testing is required for either tritium or promethium sources in commodities.

4. Leak test results are retained on file by the laboratories.

(7) SOPs. RPOs where maintenance is performed (DS/GS & Depot) ensure Standard Operating Procedures (SOPs) are developed as required which implement installation regulations, ensure compliance with license requirements, and provide a safe operating environment.

(8) Radioactive Waste. The Installation RPO will accept, store and maintain a current inventory of unwanted radioactive materials. The RPO will request disposition of the unwanted radioactive materials from the Department of Defense Executive Agency for Low Level Radioactive Waste (located at Rock Island, Illinois) who will manage the removal and disposal.

3. Maintenance Concepts.

a. User/Support Level. Maintenance personnel are strictly prohibited from working on radioactive sources (Item 8).

[48] Item 10-2b(6)(b): 13 May 98, 6.i.
[49] Item 10-2b(6)(c)2: 13 May 98, 6.j.

b. Depot Maintenance Level. Depot maintenance personnel shall work in a designated controlled area.

c. Posting, Equipment and instrumentation. Posting, Equipment and instrumentation necessary will be available at these facilities as described in Item 9.

4. Surveys. The installation RPO shall perform surveys to ensure removable contamination[50] levels are maintained as low as reasonably achievable (ALARA).

a. Beta Sources.[51] Routine surveys of controlled areas and areas adjacent to them shall be performed ~~monthly~~ quarterly.[52] Controlled areas are maintained less than 10,000 dpm/100 cm^2 and uncontrolled areas less than 1,000 dpm/100 cm^2. In the event that these limits are exceeded the installation RPO will notify the ACALA RSO and decontaminate the area. If removable levels are elevated above background but do not exceed the limits above, the RPO will decontaminate and document the event.

aa. Alpha Sources.[53] Action level for removable surface contamination for alpha emitters. The restricted and unrestricted removable contamination levels for alpha emitters will be in accordance with Regulatory Guide 8.23 Revision 1, Table 2 (page 8.23-8),[54] i.e., 22 dpm/100 cm^2 for unrestricted area and 220 dpm/100 cm^2 for restricted areas.[55]

b. Tritium devices shall be wipe tested by the RPO at any location if damage to tritium sources is believed to have occurred. Removable contamination on equipment containing tritium sources should not exceed 10,000 dpm/100 cm^2 per wipe. If this level is exceeded, the device should be double wrapped in plastic bags and tagged for disposal as radioactive waste by the installation RPO. The RPO will notify the licensee of the incident by telephone followed by a written report. The report should include date and time and facts surrounding the incident, number of persons exposed, contamination levels, etc.

c. Work surfaces on which radioactive devices are repaired, shall be covered to protect from contamination. The covering shall be replaced at least once per month or when it is torn or a release of radioactive material has occurred. The material should be bagged and labeled as low level radioactive waste. The

[50] Item 10-4: 13 May 98, 6.k.
[51] Item 10-4a: 13 May 98, 6.k.
[52] Item 10-4a: 18 Mar 99, c.
[53] Item 10-4aa: 13 May 98, 6.k.
[54] Item 10-4aa: 14 Aug 98, i.
[55] Item 10-4aa: 13 May 98, 6.k.

installation RPO will store the material in a designated radioactive waste holding area until it can be properly disposed.

d. Records, to include wipe results, instrument used, name of surveyor, and dates are maintained for a minimum of 3 years per 10 CFR 20.2103.

e. Equipment/facilities released to unrestricted use are decontaminated to 1,000 dpm/100 cm^2. We ~~will~~ use the release criteria stated in Regulatory Guide 1.86 "Termination of Operating Licenses for Nuclear Reactors" June 1974, Table 1 (also see "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct Source or Special Nuclear Material," August 1987).[56] For license termination, installation closures, and decommissioning of facilities, the Army follows the requirements of 10 CFR Part 20, Subpart E.[57]

5. Shipping. The shipper has responsibility for ensuring that every package complies with the requirements in 49 CFR.

6. Receiving and Opening Packages. Incoming packages containing radioactive material are surveyed in accordance with 10 CFR 20.1906. The RPO inspects damaged packages.

7. Dosimetry: The commodities covered by this license do not constitute external radiation hazards therefore no external dosimetry program is established.

8. Tritium Bioassay Program.

a. Routine Bioassay. Personnel who work with tritium at maintenance depots will have monthly bioassay to substantiate ALARA, and verify exposures are less than public dose. Baseline and termination bioassay will also be taken for depot level maintenance workers.

b. Special Bioassay. A bioassay will be taken of personnel in the immediate vicinity of an accidental release of Tritium, or if a release is thought to have occurred. Potentially exposed individuals, i.e., users, DS/GS level maintenance, depot workers, shall be referred to medical facilities for a bioassay. The results of the bioassay will indicate the exposure as CEDE, be documented and reported to the Licensee RSO.

9. Radioactive Waste. The Department of Defense Executive Agency for Low Level Radioactive Waste (located at Rock Island,

[56] Item 10-4e: 13 May 98, 6.l.
[57] Item 10-4e: 13 May 98, 6.l(4)

Illinois) is the central manager for disposal of all DOD low level radioactive waste generated by the Joint Services and other Federal Agencies. The Executive Agency ensures the radioactive waste generated under the license issued for this application is packaged shipped and disposed in accordance with current Army, NRC and DOT regulations and disposal facility criteria through:

a. Compliance with Industrial Operations Command shipping procedures for unwanted radioactive materials.

b. On site management of removal actions

c. Detailed instructions to installations making shipments.

10. Emergency Preparedness. In accordance with the criteria set forth in 10 CFR 30.32(i)(1)(i), the quantity of radioactive material at the typical bulk storage facility would not require the establishment of a formal emergency plan for responding to a release. However, emergency response personnel are available to respond to emergency situations (e.g., medical, fire, hazardous material, etc.).

Item 11. Waste Management

Radioactive Waste. The Department of Defense Executive Agency for Low Level Radioactive Waste (located at Rock Island, Illinois) is the central manager for disposal of all DOD low level radioactive waste generated by the Joint Services and other Federal Agencies. The Executive Agency ensures the radioactive waste generated under the license issued for this application is packaged shipped and disposed in accordance with current Army, NRC and DOT regulations and disposal facility criteria through:

a. Compliance with Industrial Operations Command shipping procedures for unwanted radioactive materials.

b. On site management of removal actions

c. Detailed instructions to installations making shipments.